
New Species of *Cybianthus* Martius (Myrsinaceae) from the Hylaeon/Andean Interface of Peru

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ABSTRACT. Two new Peruvian species of *Cybianthus* Martius (Myrsinaceae), *C. tayoensis* Pipoly & Ricketson, of subgenus *Cybianthus*, from Amazonas, and *C. candamoensis* Pipoly & Ricketson, of subgenus *Weigeltia* A. DC., from Puno, are described and illustrated. *Cybianthus tayoensis* may be recognized by its terete branchlets; leaf blades 6–7 cm wide with adaxial surface showing prominulous secondary veins; and reddish flowers with calyx 1–1.2 mm long, widely ovate lobes, and entire margins. *Cybianthus candamoensis* is easily recognized by its chartaceous, elliptic leaf blades with acuminate apices; petioles 2–2.5 cm long; staminate flower pedicels 1–1.2 mm long; and calyx unequally divided, lobes deltate to subdeltate or widely ovate, 0.7–1 × 0.7–1.2 mm, margins irregular to somewhat erose apically, corolla lobes 1–1.5 × 1–1.3 mm, with margins entire. Formal conservation assessments are reported for each.

RESUMEN. Se describen e ilustran dos especies nuevas peruanas pertenecientes al género *Cybianthus* Martius (Myrsinaceae), *C. tayoensis* Pipoly & Ricketson, del subgénero *Cybianthus*, proveniente del Departamento de Amazonas, y *C. candamoensis* Pipoly & Ricketson, del subgénero *Weigeltia* A. DC., proveniente del Puno. *Cybianthus tayoensis* se puede reconocer por sus ramitas teretes, las láminas 6–7 cm de ancho, con las venas secundarias ligeramente prominentes en la haz, las flores rojizas, el cáliz 1–1.2 mm de largo, con los lóbulos aovados y con márgenes enteros. *Cybianthus candamoensis* se reconoce fácilmente por sus hojas cartáceas y elípticas con ápices acuminados, los pecíolos 2–2.5 mm de largo, los pedicelos de las flores estaminadas 1–1.2 mm de largo, el cáliz no igualmente dividido, los lóbulos deltados o subdeltados o anchamente aovados, 0.7–1.0 × 0.7–1.2 mm, los márgenes irregulares hasta algo erosos hacia el ápice, los lóbulos corolinos 1.0–1.5 × 1.0–1.3 mm, con los márgenes enteros. Se presentan evaluaciones para la conservación de cada especie.

Key words: Amazonas, Bagua, Candamo, Carabaya, *Cybianthus*, Flora del Río Cenepa Project, IUCN conservation status, Myrsinaceae, Peru, Puno.

The genus *Cybianthus* Martius was cladistically defined by the presence of unique glandular granules at the junction of the corolla tube and lobes by Pipoly (1987). In addition, the unique combination of lateral (axillary) inflorescences, gamosepalous and gamopetalous flowers, and stamens connate by their filaments at least one-fourth their length and adnate to the corolla tube at least one-third its length (Pipoly, 1987, 1992, 1998) allows for practical recognition from herbarium specimens. With the current contribution, *Cybianthus* now contains 169 species in 10 subgenera. The genus includes species formerly included in the genera *Comomyrsine* Hooker f., *Conomorpha* A. DC., *Correlliana* D'Arcy, *Cybianthopsis* (Mez) Lundell, *Grammadenia* Bentham, *Microconomorpha* (Mez) Lundell, and *Weigeltia* A. DC. (Pipoly, 1987, 1992, 1998). Among 36 species occurring in Peru, 14 are endemic (including those described here).

While preparing the taxonomic treatment of *Cybianthus* for inclusion in the Myrsinaceae for the Flora del Río Cenepa Project, a new species from the District of Bagua in the Department Amazonas, Peru, was discovered within *Cybianthus* subg. *Cybianthus*. In addition, during routine identification of Peruvian material of Myrsinaceae, a new species from Puno was discovered within *Cybianthus* subg. *Weigeltia*.

***Cybianthus tayoensis* Pipoly & Ricketson, sp. nov.**

TYPE: Peru. Amazonas: Bagua Prov., Cerro Tayo, ca. 1 hour from Chiriaco, 05°15'56"S, 78°22'W, 800 m, 19 Mar. 2001 (stam fl), *H. van der Werff*, *R. Vásquez* & *B. Gray* 16229 (holotype, MO; isotypes, FTG, USM not seen). Figure 1.

Haec species quoad ramulos trichomata biramulosa indutos, racemos erectosque simplices, nervaturas foliares

brochidodromas, petiolos aliquantum pulvinatos, necnon lobos corollinos suborbiculares *Cybiantho ruforamulo* valde arcte affinis, sed ab ea ramulis teretibus (non angulatis), laminis 6–7 (non 2–3.5) mm latis, venis secundariis adaxialibus prominulis (nec bullatis vel impressis), floribus rubris (non viridibus), calycibus 1–1.2 (non 1.2–1.4) mm longisque lobis late ovatis (nec suborbicularibus) denique marginibus integerrimis (nec erosis) praeclare distat.

Shrub 2 m tall; all vegetation portions densely rufous-stellate-tomentose, the trichomes bi- to quadrimorse (Y-shaped to 4-armed). Branchlets terete, 3.5–5 mm diam. Leaves pseudoverticillate; blades coriaceous, narrowly oblanceolate, 22.5–30 × 6–7.4 cm, apically long-acuminate, the acumen 1–3 cm long, basally attenuate, not decurrent on the petiole, dull adaxially, pallid abaxially, conspicuously black punctate and punctate-lineate adaxially and abaxially, densely tomentose on midrib adaxially and throughout abaxially, midrib raised and canaliculate adaxially, prominently raised abaxially, veins brochidodromous, the secondary veins 16 to 24 pairs, prominulous adaxially, prominently raised abaxially, with numerous rubiginous hydropotes abaxially, the margin flat except somewhat inrolled basally at maturity; petioles semiterete, the upper surface flat, 1–1.5 cm long, short-pulvinate, densely tomentose, persistent. Staminate inflorescence: an erect raceme 11–25 cm long, the rachis densely rufous-stellate-tomentulose; inflorescence bract unknown; floral bracts chartaceous, linear-subulate, 2.2–2.6 × 0.2–0.3 mm, apically long-attenuate, densely tomentulose, the margins densely glandular-ciliate; pedicels terete, 1.2–1.5(–2) mm long, densely tomentulose. Staminate flowers pendent at maturity, 4-merous, coriaceous, reddish, 1.8–2.2 mm long; calyx cotyliform, deeply divided, 1–1.2 mm long, tube 0.1–0.2 mm long, lobes ovate, 0.8–0.9 × 0.5–0.6 mm, apically obtuse, densely and prominently black punctate, punctations crowded and appearing verrucose except along margins, margins scarious, irregular, glandular-ciliate; corolla subrotate, 1.8–2 mm long, translucent, glabrous without, glandular-granulose throughout within, tube 0.7–0.8 mm long, lobes suborbicular, 1.2–1.3 × 1.1–1.3 mm, apically obtuse, not notched, densely and prominently black punctate and appearing verrucose adaxially, margin thickened, somewhat irregular, glandular-ciliate, entire; stamens 1–1.2 mm long, the filaments developmentally fused to the corolla (veins visible in clearings), anthers appearing sessile, widely obcordate, proximally reflexed, 0.5–0.6 × 0.7–0.8 mm, apically obtuse, basally deeply cordate, apically dehiscent by apical pores, pores confluent (bi-rimose) at maturity, the connective densely and prominently black punctate dorsally; pistillode irregular, hollow, vestigial, ca. 0.1–0.3 mm long, 0.1 mm diam. Pistillate inflorescence, flowers and fruit unknown.

Distribution. *Cybianthus tayoensis* is endemic to Cerro Tayo, a sandstone formation resembling a tepuí on the eastern side of the northern Peruvian Andes, ca. 200 km south of the Cordillera del Condor and its related sandstone mountain complexes along the Ecuadorean–Peruvian border, growing at 800 m elevation.

Ecology and conservation assessment. *Cybianthus tayoensis* is an apparent point endemic, along with another 45 putative taxa being described as new to science (Rodolfo Vásquez, pers. comm.) as part of the Flora del Río Cenepa Project at the Missouri Botanical Garden. These formations are unique because they are composed of sandstone peaks covering calcareous caves below. The entire basin has been known as a center of endemism for Myrsinaceae and many other families (Pipoly, 1998). The TROPICOS database indicates that almost 20,000 specimens have been collected in the region; it is somewhat unlikely that more populations of this species will be found. According to IUCN (2001) Red List criteria, this species would be critically endangered (CRB2aD) owing to (B) area of occupancy estimated to be less than 10 km² and (2a) known only from one collection, so (D) the total population size is estimated at less than 50 mature individuals. This area is largely governed by local indigenous groups with varying land stewardship philosophies, making the species and its habitat unprotected. A landslide or other climatic event could decimate currently known populations.

Etymology. The specific epithet refers to the type locality, Cerro Tayo.

Cybianthus tayoensis belongs to *Cybianthus* subg. *Cybianthus*, which is circumscribed by leaves petiolate, apically acute, acuminate, or caudate, basally acute, attenuate, or cuneate, the margins opaque; petioles obsolete or not abruptly swollen basally; corolla rotate to subrotate; staminal tube developmentally fused to corolla tube, the stamens thus appearing epipetalous; and anthers wider than long, erect, apically rounded to truncate or emarginate, basifixed, and poricidally dehiscent. Based on its branched trichomes, simple erect raceme, brochidodromous leaf venation, somewhat pulvinate petioles, and corolla lobes as wide as long or slightly wider, *C. tayoensis* is most closely related to *C. ruforamulus* Pipoly from the Colombian Amazon. However, *C. tayoensis* may be recognized by its terete (not angulate) branchlets, leaf blades 6–7 (not 2–3.5) cm wide with adaxial surface showing prominulous secondary veins (not bullate with impressed veins), reddish (not green) flowers, and calyx 1–1.2 (not 1.2–1.4) mm long with widely ovate (not suborbicular) lobes and entire (not erose) margins. This species is so similar to *C. ruforamulus*



Figure 1. *Cybianthus tayoensis* Pipoly & Ricketson. —A. Flowering branch. —B. Staminate flowers. Drawn from the holotype (*H. van der Werff, R. Vásquez & B. Gray 16229, MO*).

and so distinct from the rest of the subgenus that we do not hesitate to describe it based on staminate material alone. Our experience indicates that the pistillate plant, when found, will have the somewhat pulvinate petioles, branched trichomes, brochidodromous venation, terete branchlets, and widely ovate calyx lobes with entire margins, although the size of the floral parts will probably be smaller.

Cybianthus candamoensis Pipoly & Ricketson, sp. nov. TYPE: Peru. Puno: Carabaya Prov., headwaters of the río Candamo, 13°25'S, 69°55'W, 400 m, 10 Mar. 1997 (stam fl), *F. Cornejo & A. Balarezo 2947* (holotype, MO; isotype, MOL not seen). Figure 2.

Haec species propter ramulos angulatosque minute rubiginoso-furfuraceo-lepidotosque 6 mm diametros grandiores, laminas chartaceas, corollas membranaceas secus margines loborum ad bases abrupte constrictas denique inflorescentia bipinnata, *Cybiantho vasquezii* arcte affinis, sed ab ea laminis chartaceis (non coriaceis), ellipticis (nec oblanceolatis), ad apices acuminatis (nec acutis vel subacuminatis), petiolis 2–2.5 (non 2.5–3) mm longis, pedicellis 1–1.2 (non 0.3–0.5) mm longis, calycibus inaequaliter (nec aequaliter) divisus, lobis calycinis deltatis vel subdeltatis vel late ovatis (nec ovatis), 0.7–1 × 0.7–1.2 (nec 1.2–1.4 × 1–1.1) mm, secus margines aliquantum erosis (nec crenatis), lobis corollinis 1–1.5 × 1–1.3 (non 2–2.3 × 1.7–1.8) mm, secus margines integerrimis (nec crenatis) statim distinguitur.

Shrub to 1.5 m tall. Branchlets angulate, 5–7 mm diam., minutely rubiginous-furfuraceous-lepidote and glandular-granulose, glabrescent. Leaves mixed, alternate, and pseudoverticillate; blades chartaceous, elliptic, (18–)20–34(–37.2) × (7.2–)10–15.5 cm, apically abruptly acuminate to cuspidate, the acumen 1–2 cm long, sordid adaxially, inconspicuously black punctate and bearing numerous minute rubiginous lepidote scales abaxially, venation brochidodromous, midrib elevated and somewhat canaliculate adaxially, prominently raised abaxially, secondary veins 10 to 12 pairs, prominulous adaxially, prominently raised abaxially, the margin entire, somewhat irregular, flat, decurrent on the petiole; petioles canaliculate, 2–2.5 cm long, bearing numerous rubiginous-lepidote scales, swollen basally to 3 mm at base. Staminate inflorescence: a bipinnate panicle, erect to 13 cm long; inflorescence bract unknown; secondary branch bracts unknown; floral bracts membranous, linear-subulate, 1.8–2 × ca. 0.2 mm, translucent, scattered black punctate, stellate tomentulose, the margin irregular, entire, glandular-ciliate; pedicels terete, 1–1.2 mm long, densely rufous-glandular-papillose. Staminate flowers: membranous, 4-merous, 1.6–1.8 mm long; translucent white; calyx cotyliform, 1–1.2 mm long, unequally divided, tube 0.25–0.5 mm

long, lobes deltate to subdeltate to widely ovate, 0.7–1 × 0.7–1.2 mm, apically acute to a rounded tip, with 2 to 3 prominent black punctations, sparsely glandular-papillose, margin irregular to somewhat erose apically, glandular-ciliolate; corolla subrotate, 1–1.2 mm long, tube 0.4–0.5 mm long, densely glandular-granulose within, lobes very widely ovate to suborbicular, 1–1.5 × 1–1.3 mm, apically obtuse to rounded, abruptly constricted basally, densely glandular-granulose medially within toward base, margins hyaline, flat, glabrous; stamens subequal or equal to the corolla, 1.6–1.8 mm long, staminal tube 0.4–0.5 mm long, filaments flat, proximally recurved, 0.7–0.8 mm long, anthers obloid, 0.4–0.5 × 0.6–0.7 mm, apically broadly rounded, the connective minutely and prominently black punctate dorsally; pistillode obturbinate, hollow, 0.5–0.6 mm long, 0.5–0.6 mm diam. Pistillate inflorescence, flowers, and fruit unknown.

Distribution. *Cybianthus candamoensis* is endemic to the headwaters of the Río Candamo, a tributary of the Río Tambopata, in a valley that winds among isolated ridges of 1000 and 2000 m, on the northern slopes of the southernmost Peruvian Andes north of Lake Titicaca on the Peru-Bolivia border, 400–600 m elevation.

Ecology and conservation assessment. *Cybianthus candamoensis* is an apparent point endemic, along with another two dozen putative taxa being described as new to science (Vásquez, pers. comm.). The area of distribution of *C. candamoensis*, together with the Río Tambopata area, comprises the Tambopata–Candamo Reserve, which is the subject of studies carried out by several conservation organizations and the Missouri Botanical Garden (Vásquez, pers. comm.) owing to its high rate of endemism. According to IUCN (2001) Red List criteria, this species would be critically endangered (CRB2aD) owing to (B) area of occupancy estimated to be less than 10 km² and (2a) known only from one collection, so (D) the total population size is estimated at less than 50 mature individuals. While a certain level of protection is afforded the area, there are insufficient personnel to protect it. It is possible that even a climatic event could decimate currently known populations.

Etymology. The specific epithet refers to the type locality, the Río Candamo.

Cybianthus candamoensis belongs to *Cybianthus* subg. *Weigeltia*, which is circumscribed by the following characters: plants polyaxial; petioles abruptly swollen basally; corolla rotate to subrotate; and anthers wider than long, erect, apically rounded to truncate or emarginate, dorsifixed, versatile, and

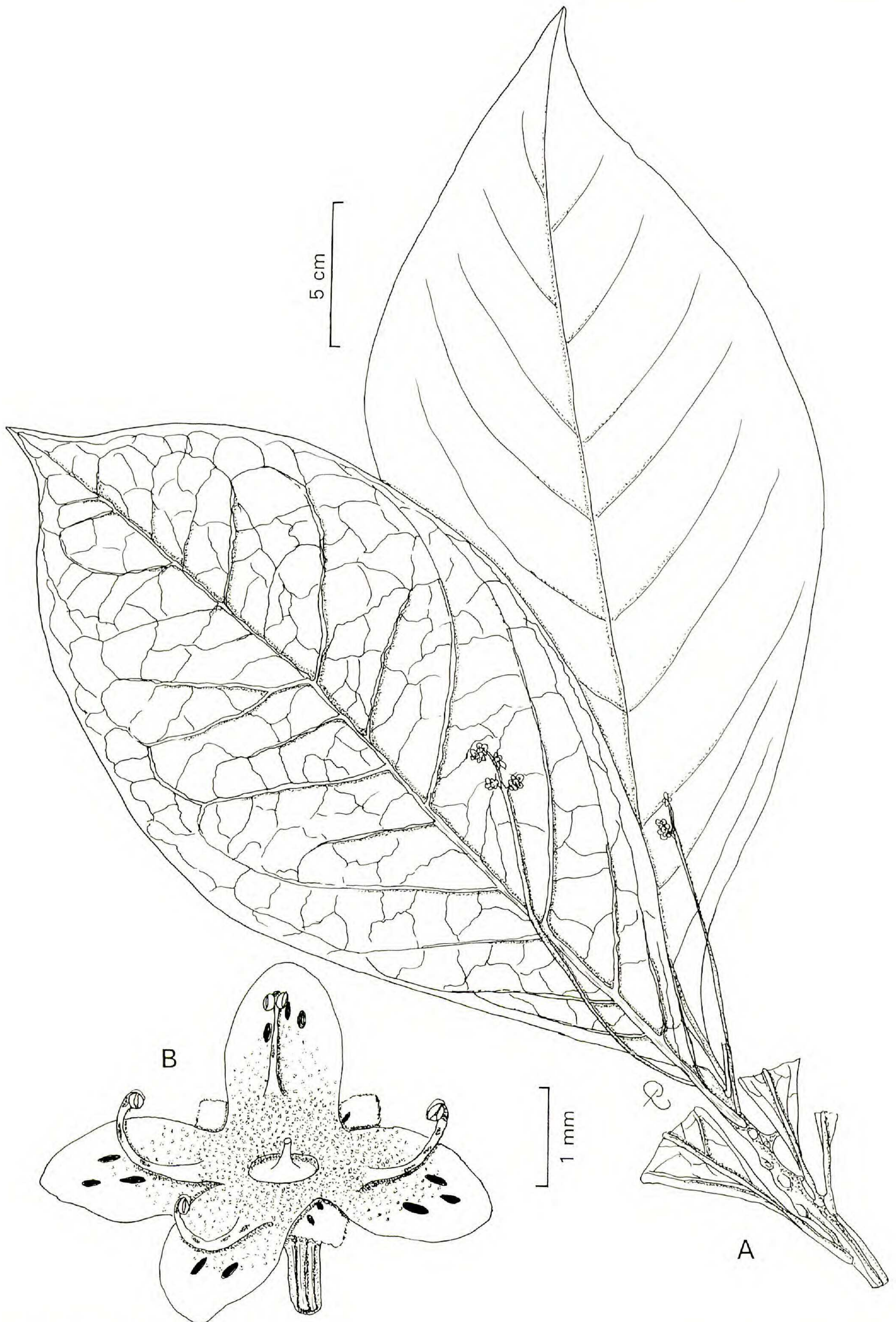


Figure 2. *Cybianthus candamoensis* Pipoly & Ricketson. —A. Flowering branch. —B. Staminate flower. Drawn from the holotype (F. Cornejo & A. Balarezo 2947, MO).

longitudinally dehiscent. With angulate, minutely rubiginous-furfuraceous-lepidote branchlets greater than 6 mm diam., chartaceous leaf blades, membranous corolla with lobe margins abruptly constricted basally, and bipinnate panicle, *C. candamoensis* is most closely related to the vicariant *C. vasquezii* Pipoly, but may be easily separated by the chartaceous (not coriaceous), elliptic (not oblanceolate) leaf blades with acuminate (not acute to subacuminate) apices, petioles 2–2.5 (not 2.5–3) cm long, staminate flower pedicels 1–1.2 (not 0.3–0.5) mm long, calyx unequally (not equally) divided, lobes deltate to subdeltate or widely ovate (not ovate), 0.7–1 × 0.7–1.2 (not 1.2–1.4 × 1–1.1) mm, margins irregular to somewhat erose apically (not coarsely crenate), corolla

lobes 1–1.5 × 1–1.3 (not 2–2.3 × 1.7–1.8) mm with margins entire (not coarsely crenate).

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